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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ryou Terao

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

WOLLSCHLAGER, JEFFREY MICHAEL

ART UNIT

PAPER NUMBER

1791

NOTIFICATION DATE

DELIVERY MODE

01/29/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/591,056	Applicant(s) TERAO ET AL.	
	Examiner JEFFREY WOLLSCHLAGER	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 15-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of group 1, claims 1-14, in the reply filed on November 25, 2009 is acknowledged. The traversal is on the ground(s) that there is no significant additional search burden to examine the product claims. This is not found persuasive because 1) for the reasons set forth in the restriction requirement, unity of invention is lacking between the restricted groups and 2) the patentability of product by process claims is not limited to the method by which the product is made (see MPEP 2113). .

The requirement is still deemed proper and is therefore made FINAL.

Claims 15-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Objections

Claim 9 is objected to because of the following informalities: the word - - least - - is misspelled "lest". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 3 recites "the degree of vacuum". There is insufficient antecedent basis for this limitation in the claims. The "depressurized" limitation in claim 2 does not clearly require a vacuum.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al. (US 5,213,737) in view of JP 1121174 (IDS document) or JP 2000-238023 (IDS document).

Regarding claims 1-14, Ford et al. teach the basic claimed process of extruding a ceramic article comprising extruding the material in an extrusion molding machine in which a discharge outlet of a twin screw extruder and a material feed opening of a single screw extruder are connected (Abstract; col. 5, line 60-col. 6, line 10; Figure 1) and extruding the material through a die (Figure 1). Ford et al. do not explicitly teach extruding the ceramic sheet through a die that produces a sheet with a thickness of from 1 to 10 mm. However, JP 1121174 teaches a method of extruding ceramic materials wherein they teach that it is known to extrude ceramic materials in sheet form to produce a sheet having a thickness of 1-5 mm (Abstract) and JP 2000-238023 teaches a method of extruding aluminum nitride powder in sheet form wherein the sheet has a thickness of 1.175 mm (Abstract; Example).

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Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have combined the teaching of Ford et al. with either of JP 1121174 or JP 2000-238023 and to have used the process of Ford et al. to extrude a sheet having a thickness of 1.175 mm or 1-5 mm since Ford et al. teach and suggest their method is well suited for extruding ceramic powder materials and each of JP 1121174 and JP 2000-238023 suggest the extruded ceramic in sheet forms within the claimed range of thickness are known to be suited for a variety of applications. The examiner submits that one having ordinary skill would have had at least a reasonable expectation of success when attempting to produce a ceramic sheet having a thickness within the claimed range by the method of Ford et al. and would have been motivated to do so in view of the teaching of JP 1121174 or JP 2000-238023.

It is noted that dependent claims, claims 2-14, are open to a broad reasonable interpretation and that they do not appear to claim any features that are not disclosed or rendered obvious in view of the applied art.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruta et al. (US 2002/0014710) in view of any of Ford et al. (US 5,213,737) or Rosato (Extruding Plastics – A Practical Processing Handbook; 1998; page 55) or McCullough et al. (US 4,663,103).

Regarding claims 1-14, Tsuruta et al. teach a method for molding a ceramic sheet comprising extruding a ceramic material through a two stage extruder system wherein the discharge of the first extruder is connected to the feed opening of the second extruder and the material is extruded through a die to produce a sheet that is up to about 1.5 mm thick (paragraph [0034]; Figures 1-4). Tsuruta et al. do not teach the first extruder screw is a twin screw extruder. However, Ford et al. teach and suggest such an extruder screw configuration (col. 5, line 60-col. 6, line 10); Rosato (page 55) teach that twin screw extruders are better at

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mixing materials while single screw extruders are better at pumping (i.e. thrust capacity); and McCullough et al. (col. 3, lines 1-24) suggest that it is well established in the extrusion art to compound/mix powder materials in a twin screw extruder followed by melt pumping the material in a single screw extruder through a sheet die (col. 3, lines 1-24).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Tsuruta et al. and to have employed a first twin screw extruder followed by a second single screw extruder, as suggested by Ford et al., since Ford et al. suggest that such a configuration is an alternative configuration known to be suitable in the art of extruding ceramic materials (MPEP 2144.06-2144.07).

Alternatively, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Tsuruta et al. and to have employed a twin screw extruder as the first extruder since Rosato et al. teach that it is known in the art that twin-screw extruders provide improved mixing relative to single screw extruder. Further, one having ordinary skill would have found it obvious to have continued to employ a single screw extruder in the method of Tsuruta et al. since Rosato et al. also make it clear that single screw extruders are better suited for pumping/generating pressure (e.g. suited for extrusion through a sheet die).

In a third alternative, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Tsuruta et al. and to have employed a twin screw extruder as the first extruder and a single screw as the second extruder since McCullough et al. suggest that such a configuration is a well known solution for mixing and melt pumping powdered materials in the extrusion art for sheet forming applications (MPEP 2144.06-2144.07).

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It is noted that dependent claims, claims 2-14, are open to a broad reasonable interpretation and that they do not appear to claim any features that are not disclosed or rendered obvious in view of the applied art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY WOLLSCHLAGER whose telephone number is (571)272-8937. The examiner can normally be reached on Monday - Thursday 6:45 - 4:15, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Wollschlager/
Primary Examiner
Art Unit 1791

January 28, 2010